

# (12) UK Patent Application (19) GB (11) 2 263 057 (13) A

(43) Date of A publication 14.07.1993

(21) Application No 9209668.4

(22) Date of filing 05.05.1992

(30) Priority data

(31) 9200004

(32) 02.01.1992

(33) GB

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(51) INT CL<sup>5</sup>

A47L 1/02

(52) UK CL (Edition L)

A4F FAQ F51

U1S S1236

(56) Documents cited

EP 0047344 A1 BE 000873886 A DE 004016259 A

DE 003923070 A DE 002403919 A NL 008103143 A

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(58) Field of search

UK CL (Edition K) A4F FAQ FBF

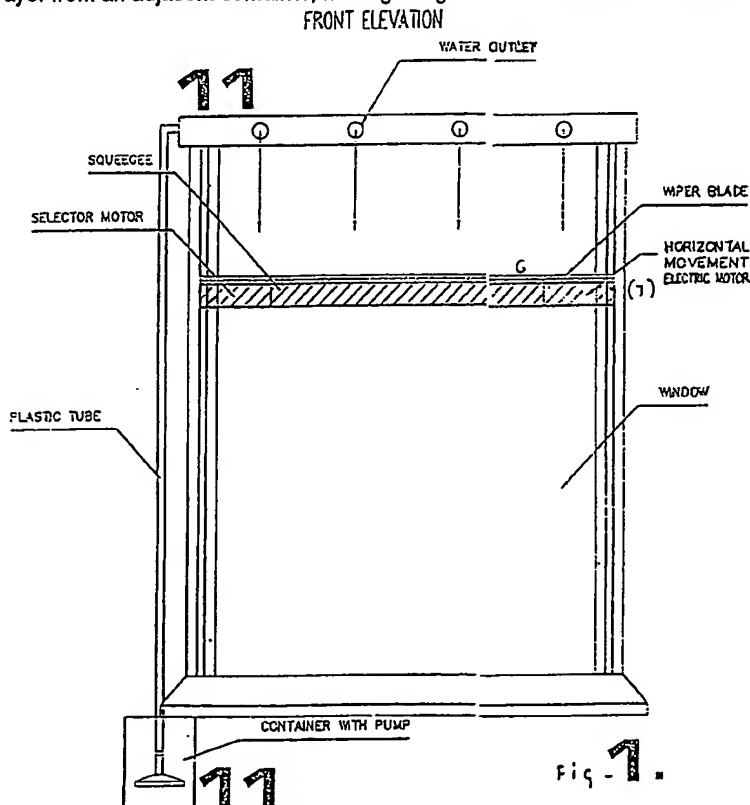
INT CL<sup>5</sup> A47L

Online databases: WPI

## (54) Cleaning system for windows

(57) A cleaning system for window panes inclusive of those encountered on tall buildings, consists of a sprayer and a squeegee (G). The squeegee contains no metal to scratch surfaces while its single blade removes soap residue and water, even from the tightest of corners, and fits on the outside of the window pane. There is a motor means (7) for driving the movable squeegee which is capable of performing an up and down movement and/or a side to side movement.

The motor means can be operated from the space on the inside of the window pane. (1) The spraying medium may be supplied to the sprayer from an adjacent container, holding trough or mobile reservoir located within the building.



The reference to figure 8 of the drawings in the printed specification are to be treated as omitted under Section 15(2) or (3) of the Patents Act 1977.

At least one of these pages has been prepared from an original which was unsuitable for direct photoreproduction.

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FRONT ELEVATION

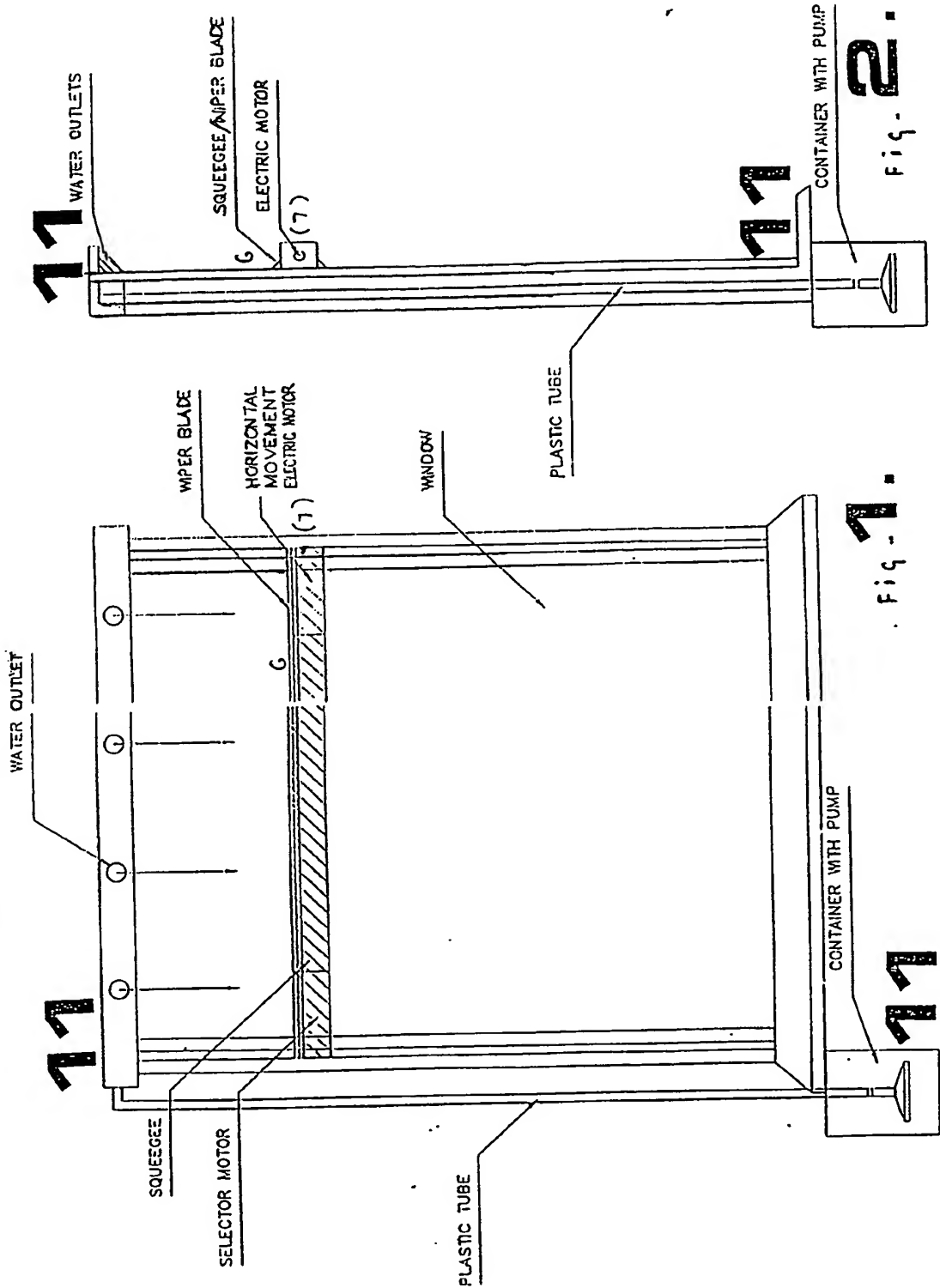


Fig-1

END ELEVATION

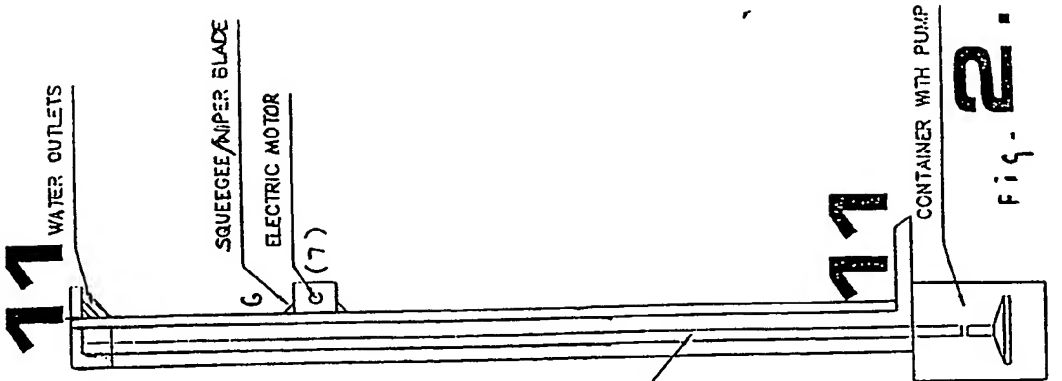


Fig-2

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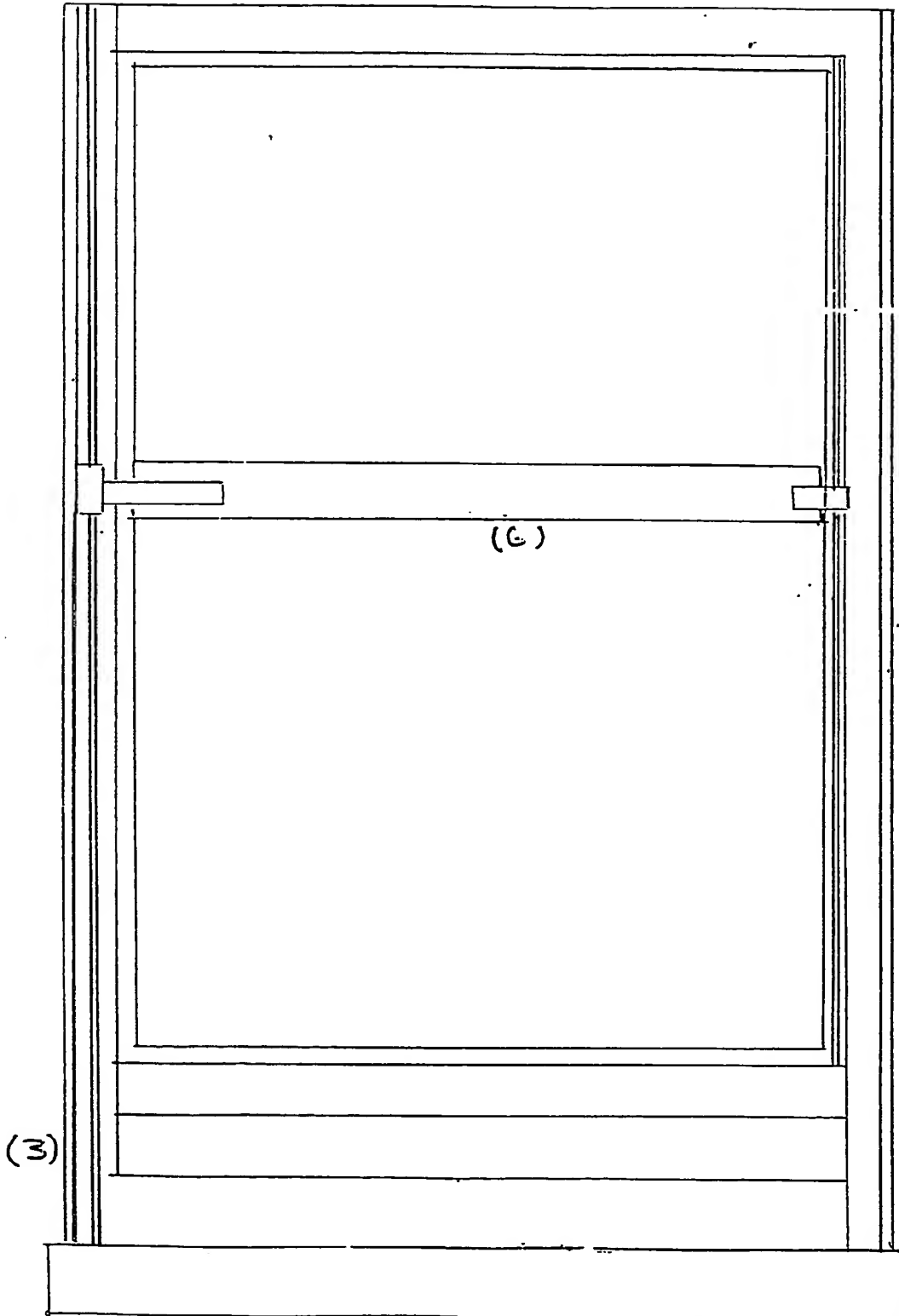


Fig. 3

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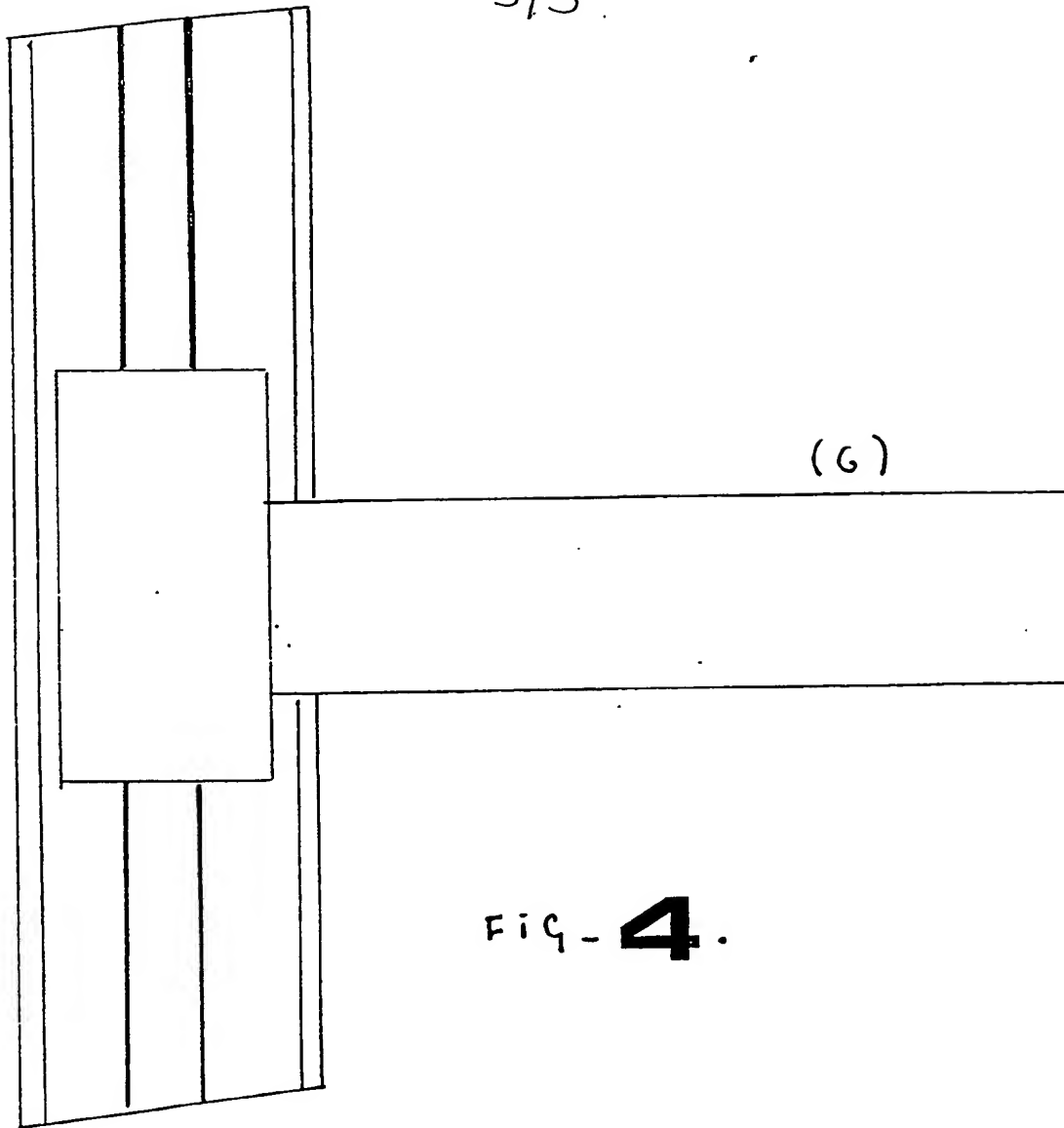


FIG - 4.

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Cleaning system

Description of system  
(Mode of operation)

The invention relates to a cleaning system for 'most' windows inclusive of difficulty accessible window panes. 'Difficulty accessible' window panes relative to tall buildings have so far been cleaned at great cost. This requires the employment of expensive winching and hoisting equipment capable of directing a platform specially designed for window cleaners along all window panes.

This type of equipment is attached to the building on a permanent basis and is a source of great expenditure, especially when one considers the wages that have to be paid to the window cleaners manning this movable platform or cage.

The aim relative to this invention is to provide a new and improved cleaning system for most window panes inclusive of those of difficult access. This innovation will be cost effective and facilitate ease of use.

To this end a cleaning system according to the invention consists of a group of sprayers placed above the window and/or at the sides of the window. This system also involves an ergonomically designed single bladed and/or double bladed squeegee which fits on the outside of the window pane and is capable of an up and down and/or side to side mode.

## Cleaning system

Description of system  
(Mode of operation)

The 'slimline' ergonomically designed squeegee represents an innovative step both in its type and application. The said squeegee is driven by motor means. This aforementioned motor means can be operated from the space on the inside of the window pane. Conversely this motor means can be operated externally to the window pane. The spraying medium being supplied to the sprayer from the space on the inside and/or a juncture on the outside of the window pane. Obviously this will permit use of the entire cleaning operation from the inside of the building.

According to a certain preferred of embodiment, the said squeegee is mounted by nut means on at least one vertically arranged screwed rod which is driven by motor means. A further major inventive step pertains to the movement and the mounting of the squeegee which will be delineated in this paragraph. Conversely the squeegee may be possessed of a bracket at either end. These brackets will run in 'easily affixed' streamline runners. Thus at all times run smoothly and efficiently achieved of course by motor means.

## Cleaning system

Description of system  
(Mode of operation)

Further pertaining to this invention, the squeegee motor means can efficiently be connected either to the inside or the outside of the window pane.

The sprayers will of course be in communication with a fluid coupling for water complete with an added detergent which opens on the inside and/or the outside of the window pane. A separate motor may be provided for each window pane. Conversely one central connectable motor maybe used for a number of window panes.

A further major specific embodiment of this innovation is the source and 'containing' of the required water. This utilisation of water will facilitate the invention being in wide use. The said 'containing' of the water is a further 'new' and inventive step. A container will be provided in the home and adjacent to the window. This may be replenished with water and detergent whenever required. Conversely a UPVC window may be purpose built to contain the water within its lower half. The rails and the style acting as its holding trough. The said holding trough will have an inlet and may be topped up whenever required to conform with an easily attached gauge.

## Cleaning system

Description of system  
(Mode of operation)

According to the said major specific embodiment the water with added detergent may be efficiently pumped from the container and/or holding trough. Relative to tall buildings the previously mentioned connectable main motor and/or individual motors may apply.(7)Pertaining to tall buildings the water for 'each' window may be taken (pumped) from its adjacent container and/or its holding trough and/or a mobile reservoir.

The mobile reservoir would necessarily involve a central connectable motor, possibly a two-way portable drill thus ensuring an adequate supply of water.

According to further elaboration of the invention the sprayers are constituted by a flexible hose in conjunction with a spraying tube through which the spraying medium is squirted and/or poured over the window pane. The hose has such a length as to be capable of touching the window pane via the jet, node or outlet.



Cleaning system

Description of system  
(Mode of operation)

According to the invention and especially relative to tall buildings, obviously the window pane can be provided with a closable opening that extends over its full width. This opening will provide a means of maintenance, a means of assembly and a means of disassembly in respect to the sprayers and/or squeegees. All this work may be undertaken from inside the building.

With regard to the average home it will not always be necessary to be so overly elaborate in respect to facility for maintenance. The maintenance, mounting and disassembly of sprayers and squeegees can be conducted from outside the building. The device should not need a great deal of maintenance. The ultra-modern squeegee will have a long life and will rarely need replacing.

In order to clarify the invention a number of examples of embodiment will be described, reference being made to the drawing.

Fig 1 is an outside view of a window pane provided with a system according to the invention.

Fig 2 is a sectional view along the line 11-11 in Fig 1.

Fig 3 'squeegee' system of Fig 2 in greater detail and on a larger scale.

Fig 8 display of holding trough.

Fig 4 is a close up view of the revolutionary single bladed squeegee and its attaching bracket.

Fig 1 and 2 show a window pane 1 which is set in a window frame 2. On the upper side, extending over the width, is a longitudinal opening 3 allowing communication between the inside and outside of the window pane, so that the mounting, disassembling maintenance and repair operations at the sprayers or the squeegee can be carried out from inside the building. The opening 3 can be closed with a cover.

## Cleaning system

Description of system  
(Mode of operation)

Clearly the invention is not restricted to the examples of embodiment described in connection with tall buildings but also extends to the average home. Extending this device for use in the average home and for a regular use on most windows is directly attributable to the containing of the water, ie 'container or water trough'. This static water supply is a significant innovative step. The said container or water trough will make this invention simple of use and available to all householders as it will obviate the need for complicated plumbing. The water source being held at the window.

The single bladed squeegee is also a major inventive step as it has never been electronically applied in this guise previously. It is ergonomically designed, will move smoothly and efficiently leaving the window cleaned and polished. Its design will facilitate removal of crustation and bird droppings etc.

The operation switch will consist of a button for spraying and a button to activate the squeegee. The process may be repeated as often as required.

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DEFINITION OF TERMS

A Squeegee (G)

An ultra modern 'slimline' single blade which removes soap residue and water.

A Sprayer

'A Jet' for rapid release of water. 'A Node' for passive release of water. An outlet or outlets for a general diffusion of water.

CLAIMS

1. 'Cleaning system for a window pane relative to buildings and for use in all homes, consisting of a group of sprayers and a squeegee. The squeegee fits on the outside of the window pane. The ergonomically designed single bladed squeegee represents an inventive step both with regard to its type and application. The said squeegee may contain no metal to scratch surfaces or conversely it may be appropriately built with metal and has 'never' before been activated by motor means. The motor means accomplishes an up and down mode and/or a side to side mode. The motor means can be mounted on the inside or the outside of the pane and is operated from within the building.
2. The spraying medium is supplied to the sprayers, the origin of the water being a bottle/container or a holding trough. This static water supply is a major innovative step and obviates the need for complicated plumbing. The said bottle/container is kept inside the building and is attached adjacent to each window pane. This method of water storage will make the invention readily available to all.
3. This invention is characterised by the mounting of the squeegee and that it is driven by motor means. It will be mounted by nut and/or bracket on a least one vertically arranged screwed rod. Conversely the squeegee may run in a slimline runner easily affixed either side of the window pane.
4. The cleaning system according to claims 1,2 or 3, characterised in that the motor means can be connected either to the inside or the outside of the window pane. This motor means facilitates the operation of an ergonomically designed squeegee. Important note - A squeegee and not an ordinary sweep.
5. The cleaning system according to any one of the preceding claims exemplified in that the sprayers are in flow communication with a fluid coupling for liquid which opens on the inside and/or the outside of the window pane.
6. The cleaning system according to any one of the preceding claims, explained in that the sprayer is jointly constituted by a flexible tube that is thus attached to a sprayer pipe. This being the route for the spraying medium which is squirted onto the window pane. The tube having such length as to be capable of linking with said node, jet or outlet.
7. Relative to most homes the device can be maintained from outside the building. The assembly and disassembly of the squeegee can also be accomplished in this way.
8. The innovative slimline runners represent a further major inventive step as does the use, the type and the said application of the squeegee.
9. In conclusion to all embodiments and the aforementioned claims autoclean windows may be purpose built, fitted and or produced as a 'DIY unit'.

Patents Act 1977

Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

9209668.4

Relevant Technical fields

(i) UK Cl (Edition K ) A4F (FAQ, FBF)

(ii) Int CL (Edition 5 ) A47L

Search Examiner

P T SQUIRE

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search

16 JULY 1992

Documents considered relevant following a search in respect of claims

1-6

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	EP 0047344 A1 (LESCRAVWAET) whole document and see particularly page 3 lines 23-27 and page 5 lines 8-12	1-6
X	US 4257138 (CLEMENTS & MILLER) whole document and see particularly column 1 lines 50-55	1,3-6
X	US 1662887 (HARRIS) whole document and see particularly page 1 lines 18-49	1,3-6
X	BE 873886 (GABELOU) see Figures	1,4-6
X	DE 4016259 A1 (BRUGGER) see Figure 1	3-5
X	DE 3923070 A1 (RIBIC) see Figures	1,3-5
X	DE 2403919 A1 (SCHWARZ) see Figures and page 2 lines 18-21	1,4,5
X	NL 8103143	
X	NL 7205385 (TERMATEN)	

Category	Identity of document and relevant passages	Relevant to claim(s)

#### Categories of documents

X: Document indicating lack of novelty or of inventive step.

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A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

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